Identification of factors influence to complétion of adoption procès of ecolabel in fisheries product

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MATEC Web of Conferences **177**, 01025 (2018) https://doi.org/10.1051/matecconf/201817701025
ISOCEEN 2017

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Abstract. This study aims to determine what factors affect consumers in the process of adoption of eco-label on fishery products and provide program recommendations to improve eco-label adoption. The study used primary data through the questionnaire in a Likert scale 1-5 to 200 respondents in Semarang City, Central Java Indonesia. The process of adoption of eco-label is divided into two phases: initiation of adoption process and completion of the adoption process, the discussion focus on completion phase. Hypothesis testing is done by multiple linear regression analysis. The results indicate that in the phase of completion of the adoption process, consumer buying intention and consumer experience is moderator variable that has the greatest influence to accelerate the completion of the adoption process.

1 Introduction

Since 2002, 72% of the world's marine fish stocks were being harvested faster than they could reproduce. Fishing activities have various negative impacts on marine ecosystems. The greatest concern is the rapid depletion of fish population due to extensive commercial fishing. Overfishing occurs when fish are caught faster than they can reproduce, and for many scientists, it has become one of the greatest impacts of human activity on oceans. Overfishing increases the vulnerability of ocean ecosystems and may contribute to the decline of other marine species [1]. Research results from the Indonesian Marine Fishery Research Center regarding the estimation of fishery status stated that 6 out of 11 WPP (Fishery Management Areas) of Indonesia showed clear symptoms of overfishing [2].

Eco-labels can be a solution to prevent overfishing [3]. Product certification and eco-labeling are tools that can be used to support fisheries management. The goal of the eco-labeling program is to create market-based incentives for better management of fisheries by creating consumer demand for seafood products from well-managed stocks. Eco-labels are seals of approval given to products that are deemed to have fewer impacts on the

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environment than functionally or competitively similar products [4]. Ecolabelling is only one type of environmental performance labeling and refers specifically to the provision of information to consumers about the relative environmental quality of a product. There are many different environmental performance labels and declarations being used or contemplated around the world [5].

Then, eco-labeling is a way to increase fish stocks from overexploited areas by providing market incentives for producers at premium prices on eco-labeled products [6]. Because of the voluntary nature of the eco-label implementation, producers need high market incentive prospects. Thus, consumers have an important role in determining the success of eco-labeling. Individual consumption has a major impact on the environment. Some experts estimate that the magnitude of impact can reach 30% to 40% [7]. Studies of consumer perceptions of eco-label are important to do, although they are often confused by the terminology used on the label.

There are two phases of consumer process in adopting eco-label, first is an initiation of the adoption process and second is a completion of the adoption process. Each phase is influenced by several variables either directly or moderated variables. Thogersen, pointing out that in initiating the process of eco-label adoption in fishery products, consumers are significantly influenced by several factors: environmental stewardship, knowledge of sustainable fisheries, subjective knowledge of sustainable fisheries, and innovation [8]. High effort makes it difficult to make eco-label work effectively to contribute to the environment and producers. One of the moderator variables is consumer confidence, experience and buying desire. Then another research says that there is an important factor that also affects consumer to buy eco-labeled products on an ongoing basis environmental campaign [9].

Knowing the key factors affecting consumers in adopting eco-labels on fishery products can provide practical implications for encouraging companies to apply eco-labels that can later be used to create good marketing strategies that effectively impact companies and the environment. Based on the description above it will be conducted research to analyze the factors that affect consumers in adopting eco-label on fishery products.

2 Literature review

Eco-label comes from the word eco which means the environment and the label which means a mark on the product that differentiates it from other products. Eco-labels help consumers to choose environmentally friendly products as well as serve as a tool for manufacturers to inform consumers that the products they produce are environmentally friendly [10]. Eco-labels are provided through an independent third party certification process to assess that a product is manufactured with due regard to environmental preservation principles. Referring to the GATT (General agreement on tariff and trade), the eco-label is based on non-discrimination and on a voluntary basis. Voluntary basis means that the certification system works on the basis of market incentives. Manufacturers can see market incentives as willing to pay more (WTP) for labeled products or opportunities to develop new markets.

Adoption is the decision to fully use new ideas as the best way to act. Decision innovation is a mental process since someone knows the existence of innovation to take the decision to accept or reject it and then confirm it. Manifestations of this form of adoption can be seen or observed in the form of behavior, methods, and equipment and technology used in communication activities. Thogersen suggests that the adoption process on eco-label consists of two stages. The first stage is the initiation of the adoption process whereby consumers have begun to accept the concept and understand the purpose of the concept. The second stage is the completion of the adoption process whereby consumers will begin to try and continuously adopted.

Discussion in this paper is only on completion of the adoption process. Initiation of the adoption process already done and hypothesis test result stated that hypothesis testing H1 (β = 0.806; p>0.05) accepted. Chekima et all [9] adds a variable moderates consumers to continuously purchase eco-label products, it is environmental campaigns, as illustrated in the following model in figure 1.

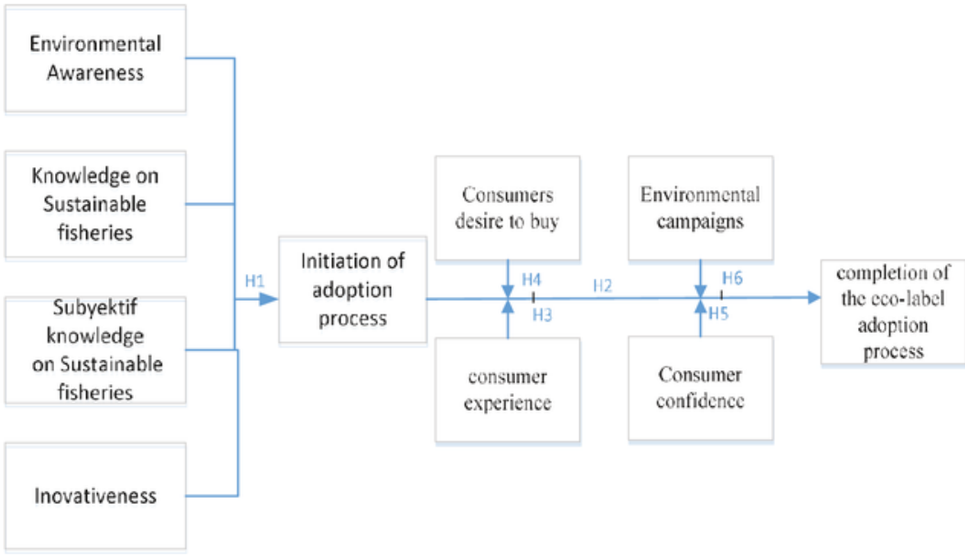

Fig. 1. Model of completion of the adoption process

Figure 1 describes that Initiation of adoption process influence by Environmental Awareness, Knowledge on Sustainable fisheries, Consumer subjective knowledge on Sustainable fisheries, and Innovativeness. The completion of the adoption process is a process moderated by four factors. The first factor is the desire to buy or effective response where consumers like and want to make a decision to buy eco-label fishery products. The second factor is the experience or process that brings someone to a higher behavioral pattern, includes purchasing eco-labeled products in the past. The third factor is consumer confidence or consumer perception to National Standardization Agency as the government institution that makes regulation of environmentally friendly products in Indonesia. The fourth factor is environmental campaigns which provide by society and government.

3 Research Methods

3.1 Research Sample and Questionnaire

In this study first conducted a preliminary study by distributing questionnaires to the people of Semarang city. The study used regression analysis, it was suggested that 15 - 20 observations per independent variable. Numbers of independent variables is 9 variable, the minimum number of respondents is 200 respondents. Respondents are the people of Semarang city who had ever bought any brand fishery products.

There are two parts of the questionnaire used in this research. Section 1 contains general data of respondents and questionnaire instructions. Section 2 contains assessments of six research variables: initiation of the eco-label adoption process, consumer buying desire, consumer trust, environmental campaigns, initiation of the adoption process, and the process of completing the adoption.

3.2 Research Hypothesis

The model of consumer eco-label adoption process gives a brief overview of factors affecting completion adoption process. According to the model, the research has six hypothesis listed in table 1. The first study was already done and proven the hypothesis one was accepted. Then, the result and discussion only focus on others hypothesis. The results showed that environmental awareness, knowledge of the respondents about sustainable fisheries, subjective knowledge of respondents and innovativeness proved to have the correlation with the initiation of the adoption process. The test results also state that each significantly positive effect on consumers when initiating the process of adoption of eco-label [11].

Table 1. Research Hypothesis on Consumer completion of ecolabel

H1:	The Environmental Awareness, Knowledge on Sustainable fisheries, Consumer subjective knowledge on Sustainable fisheries, and Innovativeness positively and significantly affects the Initiation of an adoption process
H2 :	The initiation of the eco-label adoption process positively and significantly affects the completion of the eco-label adoption process
H3:	The consumer experience becomes a moderator that positively influences the relationship between the initiation of the eco-label adoption process with the completion of the eco-label adoption process
H4:	Consumers desire to buy is a moderator that positively influences the improvement of the relationship between the initiation of the eco-label adoption process and the completion of the eco-label adoption process
H5:	Consumer trust is a moderator that positively influences improving the relationship between the initiation of the eco-label adoption process with the completion of the eco-label adoption process
H6:	The environmental campaign is a moderator that positively influenced the improvement of the relationship between the initiation of the eco-label adoption process and the completion of the eco-label adoption process

3.3 Data Processing

Data analysis was done by using compound linear regression. Linear regression is the statistical method used to form models relationship between dependent variable (Y) with one or more independent variables predictor (X). A variable moderator can strengthen or weaken the relationship between independent and dependent variables. Testing the statistics on moderator variables usually, use Moderated Regression Analysis (RAM). Therefore, linear regression analysis is used to measure influence between independent variables (X) that exist in the process of adoption of eco-label (Y).

4 Result and Discussion

Respondents were 87 men and 113 women. The majority of respondent was between 20 and 40 years old. A total of 94 respondents educated bachelor degree and 63 have high school education. Respondents' income spread almost equally between 1 million to 7 million per month, as many as 34 respondents earned more than 7 million per month.

4.1 Test of Validity and Reliability

Test the validity and reliability of the questionnaire are done through a pilot study by distributing questionnaires to 40 respondents those consumers of fishery products in the city of Semarang. The reliability test was done with a total of 30 respondents and use a significance level of 5%. Test obtained r table value of 0,361. The value of r arithmetic obtained at the value of Pearson product moment. Reliability test questionnaire is done

based on Cronbach's Alpha value. If the value of Cronbach's Alpha is greater than 0.6 then the relevant variable is said to be reliable. The results of validity and reliability test are shown in Table 1 were all indicators proved valid to be used as measuring instruments and all variables are also declared reliable. List of research variables, the value of validity test, and the mean of respondent answer are given in table 2.

Table 2. Research Result for Data testing and descriptive statistic

Indicator	Code	r	Cronbach Alpha	Mean	St. Dev
Consumer experience (PN)					
Consumer experience in buying eco-label products	PN1	0,773	0,884	3,490	0,977
Consumer Buying intention (KM)					
Consumers will buy eco-labeled products in stores	KM1	0,557	0,890	3,735	0,799
Consumers will try to buy fish products with eco-label fisheries	KM2	0,588		3,835	0,801
consumers will plan to shop so they can buy eco-label fishery products	KM3	0,437		3,685	0,836
Consumer Trust (KK)					
Consumers feel the role of BSN is now good	KK1	0,385	0,891	3,460	0,844
Consumers feel that BSN is an independent institution with no political interference	KK2	0,407		3,315	0,818
Consumers do not believe in BSN	KK3	0,391		3,330	0,695
Consumers have a positive perception towards BSN	KK4	0,648		3,535	0,782
Environmental campaign (KL)					
Environmental campaigns increase consumer knowledge of green products	KL1	0,699	0,888	3,945	0,797
Consumers enjoy the messages that environmental campaign ads pose	KL2	0,623		3,765	0,808
Environmental campaigns are able to guide consumers to make purchasing decisions on eco-labeled products	KL3	0,495		3,835	0,762
Variable Initiation of adoption process (MA)					
Consumers have heard of eco-labels on fishery products before	MA1	0,496	0,889	3,335	0,931
Consumers know the eco-label well	MA2	0,627		3,405	0,925
Process Variables Completing Adoption (SA)					
Consumers will strongly consider the eco-label when buying fishery products in general.	SA1	0,395	0,892	3,350	0,986

4.2 Descriptive statistics

Results of descriptive statistics show that all variables have a mean value above 3 and fall into the category agree. The highest mean value is environmental campaign variables with mean value 3,848. An environmental campaign is a campaign that aims to influence consumer purchase behavior by encouraging not to purchases products that pollute the environment and lead to buying products that environmentally friendly. The indicator that gets the largest mean value in the environmental campaign variable is KL1 which is 3.945. This means that respondents feel agree that environmental campaigns will be able to increase their knowledge about a green product.

4.3 Test the classical assumption

In this research there are two stages of the regression test, first is the initiation of an adoption process and second is the completion of an adoption process. The classical assumption test is performed on each of the multiple linear regression equations. All data

used for factor-factor testing affecting the process of eco-label adoption of fishery products by consumers has passed the classical assumption test.

4.4 Hypothesis testing

Hypothesis testing is done to prove the hypothesis proposed in a study. In this study, there are 7 hypotheses. Hypothesis testing is done to determine the effect of independent variables on the dependent variable. Results of hypothesis testing give in table 3.

Table 3. The result of hypothesis testing

Dependent Variable	Independent Variable	β	Partial significantly	R	R square	Test Result
completion of the eco-label adoption process	initiation of an adoption process	1,027	0,000	0,839	0,704	accepted
	Consumer experience	-0,145	0,326	0,843	0,711	rejected
	Consumer Buying intention	-0,047	0,805	0,865	0,748	rejected
	Consumer Trust	0,43	0,087	0,846	0,716	accepted
	Environmental campaign	-0,325	0,095	0,843	0,711	rejected

Based on table 3, for the hypothesis test of initiation of an adoption process, the coefficient of determination is equal to 0.704 with the value of Sig. 0.000 or it can be said the completion of the process of consumer adoption of eco-label is significantly influenced by the initiation of the adoption process. Consumers buying intention rules as a moderator variable, based on the test results of consumer buying intention is a pure moderator variable with Sig value partially of 0.805. It cannot be used as an independent variable. Table 3 shows that variable consumer experience, consumer buying intention, and environmental campaign individually or partial have no significant effect on the completion of the eco-label adoption process.

Based on the results of testing the consumer experience is a pure moderator variable with Sig value. (Partial) of 0.326 so it cannot be used as an independent variable. The research finding that variables of consumer experience as variables moderator is in accordance with research conducted by Torgersen. Consumer experience is a pure moderator variable whose effect is moderate only and has no direct effect on the consumer for the completion of the eco-label adoption process.

Chase and Smith showed that 70 percent of respondents in a survey that claimed to be influenced by environmental campaigns in the decision to buy products to eco-label [12]. In addition, research conducted in Malaysia suggests that research on green product purchases should add environmental campaign variables as they may affect consumers' buying behavior and willingness to pay more for eco-labeled products. Environmental campaigns allow consumers to recognize the benefits of purchasing eco-labeled products and will significantly improve the green market [13].

5 Conclusion

Completion of the process of consumer adoption of eco-label is significantly influenced by the initiation of the adoption process. Consumer experience, consumer buying intention, and environmental campaign individually or partial have no significant effect on the completion of the eco-label adoption process. Acceleration the adoption process that is consumer movement from initiation phase to completion phase has moderator variable that gives most significant influence. The moderator variables are

consumer buying intention with influence value that is equal to 0,748 and consumer experience with influence value that is equal to 0,711.

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